

ABSTRACT

The present invention relates to a zirconium alloy having excellent corrosion resistance and mechanical properties and a method for preparing a nuclear fuel cladding tube by zirconium alloy. More particularly, the present invention is directed to a zirconium alloy comprising Zr-aNb-bSn-cFe-dCr-eCu (a=0.05-0.4 wt%, b=0.3-0.7 wt%, c=0.1-0.4 wt%, d=0-0.2 wt% and e=0.01-0.2 wt%, provided that Nb+Sn=0.35-1.0 wt%), and to a method for preparing a zirconium alloy nuclear fuel cladding tube, comprising melting a metal mixture comprising of the zirconium and alloying elements to obtain ingot, forging the ingot at β phase range, β -quenching the forged ingot at 1015-1075 °C, hot-working the quenched ingot at 600-650 °C, cold-working the hot-worked ingot in three to five passes, with intermediate vacuum annealing and final vacuum annealing the worked ingot at 460-540 °C, which can be applied to the core components in a light water and a heavy water atomic reactor type nuclear power plant.